January 1979

Test 1316: International Hydro 84 Utility / Row Crop Diesel

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1316
INTERNATIONAL HYDRO 84 UTILITY DIESEL
ALSO INTERNATIONAL HYDRO 84 ROWCROP DIESEL

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—584 rpm)								
58.73 (43.80)	2401	4.307 (16.302)	0.513 (0.312)	13.64 (2.687)	180 (82.5)	60 (15.8)	75 (23.8)	29.007 (97.951)
Standard Power Take-off Speed (540 rpm)—One Hour								
56.68 (42.27)	2222	4.044 (15.309)	0.499 (0.304)	14.01 (2.761)	180 (82.1)	60 (15.3)	75 (23.8)	29.010 (97.962)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
51.56 (38.45)	2479	3.903 (14.774)	0.530 (0.322)	13.21 (2.602)	172 (77.8)	60 (15.3)	75 (23.9)	....
0.00 (0.00)	2622	1.643 (6.218)	....	....	156 (68.6)	59 (15.0)	75 (23.9)	....
26.58 (19.82)	2560	2.741 (10.374)	0.721 (0.439)	9.70 (1.911)	161 (71.7)	60 (15.3)	76 (24.2)	....
59.18 (44.13)	2400	4.327 (16.381)	0.512 (0.311)	13.67 (2.694)	178 (81.1)	59 (15.0)	75 (23.9)	....
13.45 (10.03)	2590	2.209 (8.361)	1.149 (0.699)	6.09 (1.200)	161 (71.7)	59 (15.0)	75 (23.9)	....
39.38 (29.36)	2526	3.285 (12.436)	0.584 (0.355)	11.99 (2.361)	168 (75.3)	59 (15.0)	75 (23.9)	....
Av 31.69	**2529**	**3.018**	**0.666**	**10.50**	**166**	**59**	**75**	**29.000**
Av (23.63)		***(11.424)***	***(0.405)***	***(2.069)***	***(74.4)***	***(15.1)***	***(23.9)***	***(97.929)***

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours, Speed Setting—6.0 MPH Hi Range											
42.90 (31.99)	2733 (12.16)	5.89 (9.47)	2401	4.43	4.235 (16.032)	0.691 (0.420)	10.13 (1.995)	195 (90.3)	65 (18.3)	78 (25.3)	28.530 (96.342)
75% of Pull at Maximum Power—Two Hours, Speed Setting—6.0 MPH Hi Range											
35.15 (26.21)	2032 (9.04)	6.49 (10.44)	2495	2.99	3.581 (13.556)	0.713 (0.433)	9.82 (1.934)	177 (80.3)	65 (18.1)	83 (28.6)	28.679 (96.845)
50% of Pull at Maximum Power—Two Hours, Speed Setting—6.0 MPH Hi Range											
25.50 (19.01)	1365 (6.07)	7.01 (11.27)	2538	1.94	3.056 (11.567)	0.838 (0.510)	8.34 (1.644)	189 (87.2)	70 (21.1)	89 (31.7)	28.640 (96.713)
50% of Pull at Reduced Engine Speed—Two Hours, Speed Setting—11.1 MPH Hi Range at 2400 Engine RPM											
25.24 (18.82)	1361 (6.06)	6.95 (11.19)	1496	1.81	2.448 (9.267)	0.678 (0.413)	10.31 (2.031)	210 (98.6)	68 (19.7)	92 (33.1)	28.620 (96.645)

MAXIMUM POWER IN SELECTED GEARS

(The variable drive control was set by mfr. to give the travel speeds shown)

41.41 (30.88)	6572 (29.23)	2.36 (3.80)	2402	13.71	Lo Range	184 (84.4)	64 (17.8)	71 (21.7)	28.560 (96.443)
41.57 (31.00)	5145 (22.89)	3.03 (4.88)	2401	9.52	Lo Range	210 (98.9)	68 (20.0)	80 (26.7)	28.660 (96.781)
41.53 (30.97)	4371 (19.44)	3.56 (5.73)	2400	7.64	Lo Range	209 (98.1)	67 (19.4)	79 (26.1)	28.660 (96.781)
41.14 (30.68)	3822 (17.00)	4.04 (6.50)	2400	6.41	Lo Range	210 (98.6)	67 (19.4)	78 (25.6)	28.660 (96.781)
37.28 (27.80)	3134 (13.94)	4.46 (7.18)	2400	5.20	Hi Range	208 (97.5)	66 (18.9)	76 (24.4)	28.660 (96.781)
41.24 (30.75)	3073 (13.67)	5.03 (8.10)	2399	4.89	Hi Range	202 (94.4)	64 (17.8)	74 (23.3)	28.660 (96.781)
42.67 (31.82)	2904 (12.92)	5.51 (8.87)	2399	4.71	Hi Range	197 (91.7)	63 (17.2)	71 (21.7)	28.660 (96.781)
43.35 (32.32)	2699 (12.01)	6.02 (9.69)	2401	4.27	Hi Range	195 (90.6)	60 (15.6)	67 (19.4)	28.660 (96.781)
43.14 (32.17)	2490 (11.07)	6.50 (10.46)	2401	3.90	Hi Range	207 (97.2)	69 (20.6)	82 (27.8)	28.650 (96.747)
43.49 (32.43)	2337 (10.40)	6.98 (11.23)	2403	3.58	Hi Range	207 (96.9)	70 (21.1)	84 (28.9)	28.650 (96.747)
43.59 (32.51)	2152 (9.57)	7.60 (12.23)	2401	3.20	Hi Range	206 (96.7)	70 (21.1)	85 (29.4)	28.650 (96.747)
43.37 (32.34)	1977 (8.79)	8.23 (13.24)	2399	2.88	Hi Range	207 (97.2)	71 (21.7)	87 (30.6)	28.650 (96.747)

Department of Agricultural Engineering

Dates of Test: May 25 to June 6, 1979

Manufacturer: INTERNATIONAL HARVESTER CO., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 49.0 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8401 **Fuel weight** 6.995 lbs/gal *(0.838 kg/l)* **Oil SAE** 30 **API service classification** SC-SE/CA-CD **To motor** 2.273 gal *(8.603 l)* **Drained from motor** 1.952 gal *(7.388 l)* **Transmission and final drive lubricant** I. H. Hytran fluid **Total time engine was operated** 38.5 hours

EINGINE: Make International Diesel **Type** Four cylinder vertical **Serial No.** 246DT20114054* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.937" × 5.062" *(100 mm × 128.6 mm)* **Compression ratio** 15.5 to 1 **Displacement** 246 cu in *(4031 ml)* **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper cartridge **Oil cooler** radiator for hydraulic and transmission fluid **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat

CHASSIS: Type standard **Serial No.** B600003B000719-X- **Tread width** rear 52" *(1321 mm)* to 76" *(1930 mm)* front 54" *(1372 mm)* to 74" *(1880 mm)* **Wheel base** 88" *(2235 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 30.1" *(764 mm)* Vertical distance above roadway 30.2" *(767 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** Infinitely variable hydrostatic using variable displacement pump and motor. A range transmission provides Hi and Lo range **Advertised speeds mph *(km/h)*** Lo range 0-6.9 *(0-11.1)*, Hi range 0-18.9 *(0-30.4)*; reverse Lo range 0-3.0 *(0-4.8)*, Hi range 0-8.0 *(0-12.9)* **Clutch** none—hydrostatic drive can be controlled by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 134" *(3.40 m)* left 134" *(3.40 m)* (on concrete surface without brake) right 153" *(3.88 m)* left 153" *(3.88 m)* **Turning space diameter** (on concrete surface with brake applied) right 278" *(7.06 m)* left 278" *(7.06 m)* (on concrete surface without brake) right 316" *(8.03 m)* left 316" *(8.03 m)* **Power take-off** 540 rpm at 2222 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 152°F *(66.5°C)*. Twelve travel speeds were chosen between tire tangential pull limit and 10 mph *(16.1 km/h)*.

LUGGING ABILITY IN SPEED SETTING—6.0 MPH HI RANGE

Crankshaft Speed rpm	2401	2159	1921	1676	1439	1198
Pull—lbs *(kN)*	2699 *(12.01)*	2884 *(12.83)*	2991 *(13.31)*	3188 *(14.18)*	3168 *(14.09)*	3124 *(13.90)*
Increase in Pull %	0	7	11	18	17	16
Power—Hp *(kW)*	43.35 *(32.32)*	40.88 *(30.49)*	37.04 *(27.62)*	33.01 *(24.61)*	27.79 *(20.72)*	21.71 *(16.19)*
Speed—Mph *(km/h)*	6.02 *(9.69)*	5.32 *(8.55)*	4.64 *(7.47)*	3.88 *(6.25)*	3.29 *(5.29)*	2.61 *(4.19)*
Slip %	4.27	4.77	4.89	5.26	5.26	5.26

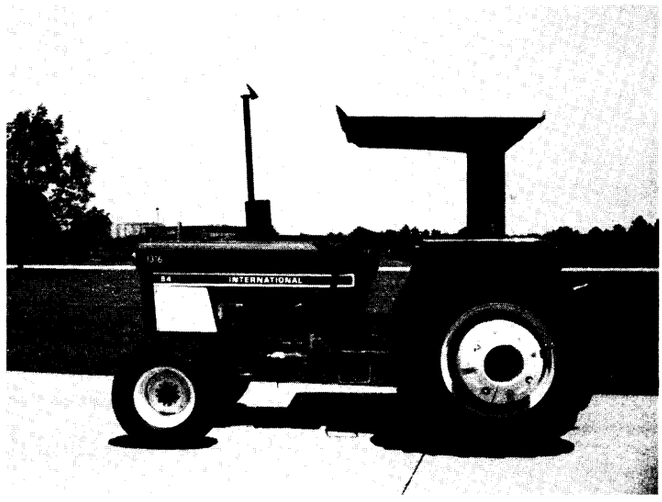
TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	99.0
75% of Pull at Maximum Power—Ten Hours	98.5
50% of Pull at Maximum Power—Two Hours	99.5
50% of Pull at Reduced Engine Speed—Two Hours	95.5
Bystander in Hi Range	88.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-28; 6; 16 *(110)*	Two 16.9-28; 6; 16 *(110)*
Ballast	—Liquid (each)	900 lb *(408 kg)*	None
	—Cast Iron (each)	625 lb *(284 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5L-15; 6; 36 *(250)*	Two 9.5L-15; 6; 36 *(250)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	32 lb *(15 kg)*	None
Height of Drawbar		14.5 in *(370 mm)*	14.5 in *(370 mm)*
Static Weight with Operator—	Rear	7030 lb *(3189 kg)*	3980 lb *(1805 kg)*
	Front	2090 lb *(948 kg)*	2025 lb *(919 kg)*
	Total	9120 lb *(4137 kg)*	6005 lb *(2724 kg)*

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1316.**

LOUIS I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers



International Hydro 84 Utility Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
H. W. Ottoson, Director